Notes from August DAG Meeting (Maria Romera)
8/14-16

similar programs or concepts to note:

- RVSM—reduced vertical separation minimum (extends 1000ft vertical separation to FL410, no change in lateral separation standards)
- HARP- high alt route planning. As direct a routing as you possibly can. (Part of NAR- national airspace redesign)

ideas for new functions or interface changes:

- memory aid for keeping track of possible "plans" while monitoring free flight aircraft
- indicator for who is in FF/who is not—is data block indicator enough?
- Addressed data link for pilot to pilot communication / FF frequency
- Something on the display to designate "right of way".
- Add equipage to the conflict alert window. (right of way?)
- Support for holding. Maybe this could work similarly to trial planning, and a holding pattern could be uplinked to the aircraft.
- Handoff indicators in data blocks need to flash more noticeably. Currently, "R" replaces the CID when a handoff is accepted by the next controller.

Open issues:

- how to deal with broadcasting "I'm working on this problem" (similar to trial planning?)
- should the controller be alerted of an imminent conflict between two FF aircraft?
- The transition to control and how to clear it:
    1. whatever route you're on presently in FF is your cleared route when FF is cancelled. Altitude must be cleared (descent).
    2. when FF is cancelled, a clearance for route and altitude is necessary. (FF canceled + arrival clearance)
    3. Aircraft on the Bowie F2 arrival are automatically cleared to continue that route and descent when FF is cancelled (no separate clearance).
- giving speeds to aircraft still in FF? (partial control?)
- is RTA a restriction on free flight, or is it analogous to coming under control from an uncontrolled airspace (as today).
- As always…MIXED EQUIPAGE

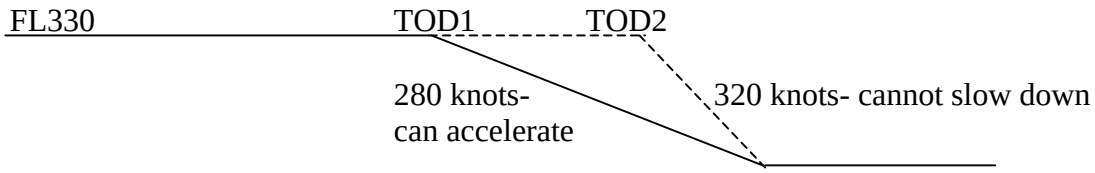
Phraseology suggestion from Jeff—a new clearance where the pilot has to make his way to FL290 (FF), then he is cleared to descend further in controlled flight. "Clear for the Bowie F2 arrival at 280 knots, cancel free flight when leaving FL290". This could be any clearance where restrictions apply when you leave FL290—you are in free flight until then, and you are responsible for getting there.

Controllers don't feel comfortable with controlling one aircraft in the FF airspace, because they feel the FF aircraft are unpredictable. They don't feel they know what the FF aircraft are going to do.
Controllers don't like the word "suggest" and won't use it. Concerned that **any** clearance may be viewed by pilots as a cancellation of FF. (unclear responsibility).

Is equipage considered in the conflict detection threshold?

MODES OF CONTROL and awareness of them: it must be clear who is in control at all times. This leads to the notion that there should be no "partial control". For example, you would have to cancel FF to issue a speed change.

Pilots cannot change anything after the final approach fix. CDTI should disable at that point. They prefer a 280 knot descent, but not faster than 300. The VNAV profile has a problem with spacing, so that if they need to make adjustments they may have to change to FLCH (in the TRACON?). This can cause a workload problem for the cockpit.



the top of descent point is built on descent speed. Pilots can speed up but if they are given a fast speed TOD is delayed and they cannot slow down and still make the crossing restriction. One way to alter the clearance to allow for this is "315 knots **when able**".

Pilots said they consider time to a fix (RTA) as FF. Without an RTA, and without a filed route such as Bowie F2 pilots would want a route, speed and altitude upon cancellation of FF. If on the Bowie F2 arrival, the pilots want the descent clearance along with their lateral clearance. In FF, they can begin their descent on the Bowie arrival to FL290 (charted).

Should the transition boundary be farther from the airport?
(120 mile horizon for planning on CDTI)

Possible clearance:
"clear Bowie F2 to FL290 in FF, then proceed in controlled flight".

Time to fix is FF, but if ATC issues a speed change then pilots will consider it cancellation of Ff and want a route and alt.

[making cdti a portable, supplemental system may help with manufacturer and airline buy-in]

in a self-separating environment, WHAT **IS** the controller's responsibility?
FF as an UNCONTROLLED AIRSPACE

Monitoring issues—boredom, vigilance
Intent issues—controllers don't feel they can predict what an aircraft in FF will do, especially in controlling one aircraft amongst FF aircraft.

What are the issues in the Terminal area?
Shared info
Workload
Responsibility—CE-11 vs our concept (self-spacing but not self-separation)

Pilot CAN say "unable". Maybe we need to emphasize this.

Gary Lohr—ATC assume responsibility at outer marker.

NLR concept of corridors through the FF airspace, a funnel. Problem is that the top of the funnel needs to be about 200 miles out, "in-trail" early.

Dave M—descent route required to place a point @290? (vern: RTA)
Pilots can make a waypoint at 290.

Jeff—move FF up to FL310 or 330?

Nancy—controllers don't know when FF a/c are **changing route**, we need to **cue** them somehow (now they have conflict alerts + timeline for ETA change).

Kevin C—group is investigating giving controllers intent info about FF a/c in a downlink. Asks us what our methods and measures are. "what are the methods by which you determine this is acceptable?" We will need to come up with objective testing of our concepts when we have them ironed out.

Dan—published transition arc (charts) about 100 miles out [+ time + alt]

Brian—**predictability**. Need to know where and when a/c will come out of FF (RTA)
[our workaround for now…use datalink to suggest speed??]

for future:
1. procedures for arrival corridor, PCA
2. cue controllers to route changes.